Introduction to Lockout/Tagout

The control of hazardous energy (lockout/tagout) standard requires that employers develop a lockout/tagout program to protect employees during machine and equipment servicing or maintenance where unexpected machine energization, start-up, or release of stored energy could cause injury to employees. Energy sources include electrical, pneumatic, hydraulic, mechanical, and thermal. There may also be stored and/or residual energy that may remain once the primary energy source is shut down. Stored energy may result from steam, air pressure, water pressure, compression of springs, or gravity.

Small businesses, like other establishments, may perform servicing and maintenance of equipment or contract with an outside contractor to perform these functions. Either way, it is mandatory that all workers understand that a potentially dangerous condition exists when a machine is being serviced and that the people who normally operate the equipment are aware of the servicing activity.

The lockout/tagout standard does not apply to normal production operations and to maintenance work on cord- and plug-connected electrical equipment for which exposure to the hazards of unexpected energization or start-up of the equipment can be controlled by unplugging the equipment from the energy source. The plug must be under the exclusive control of the employee performing the maintenance, however.

The control of hazardous energy (lockout/tagout) standard can be found under Title 29, Section 1910.147 of the Code of Federal Regulations.

Employer Responsibility

The Indiana Occupational Safety and Health Administration requires that employers plan for the control of energy during servicing and/or maintenance of machines and equipment by doing the following:

- Establish an energy control program.
- Develop, document, and utilize machine-specific lockout/tagout procedures.
- Conduct periodic inspections.
- Provide appropriate training to employees.
- Provide equipment required by the lockout/tagout procedures at no cost to employees.

Lockout/Tagout Program

Your lockout/tagout program must include documented machine-specific energy control procedures, employee training, and periodic inspections. This ensures that before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energization, start-up, or release of stored energy could occur and cause injury, the machine or equipment will be isolated from the energy source and rendered inoperative.

Procedures addressing how potentially hazardous energy will be controlled during machine or equipment servicing and maintenance must be developed, documented, and used by employees. Employers must also make sure that the established procedures are followed.

A documented procedure must include the following actions and elements that must be accomplished in sequence:

1. Preparation for Shutdown
   All authorized employees must know the type and magnitude of the energy, the hazards of the energy to be controlled, and the method or means to control the energy before the employee turns off a machine or equipment.

2. Machine or Equipment Shutdown
   Procedures must be established for turning off or shutting down each piece of equipment. An orderly shutdown should be used to avoid additional or increased hazards to employees as a result of the equipment stoppage.

3. Machine or Equipment Isolation
   Locate and operate all energy-isolating devices needed to control the energy of the machine or equipment so that the machine or equipment is isolated from the energy source.

4. Lockout or Tagout Device Application
   A lockout device is defined as a device, such as a key or combination lock, that utilizes a positive means or holds an energy-isolating device in a safe position and prevents the energizing of a machine or equipment. A tagout device is defined as a prominent warning apparatus to identify the energy-isolating device and equipment being controlled. A tag used without a lock shall be supplemented by at least one additional safety measure that provides a level of safety equivalent to that obtained by the use of a lock. This includes opening an additional disconnecting device, removal of an isolating circuit element, blocking of a controlling switch, or the removal of a valve handle to reduce the likelihood of inadvertent energization.

Only authorized employees should place the lockout or tagout device on each energy-isolating device. Lockout devices need to be affixed properly so they will hold the energy-isolating devices in a safe or off position. Tagout devices, when used, must be placed to clearly indicate that operation or movement of energy-isolating devices from the safe or off position is prohibited.

5. Stored Energy
   All possible hazardous stored or remaining energy needs to be relieved, disconnected, restrained, and otherwise rendered safe after the lockout or tagout device has been put in place. If there is a possibility of stored energy gathering to a hazardous level, proof of isolation must be continued until the servicing or maintenance is completed or until the possibility of such energy gathering no longer exists.

6. Proof of Isolation
   Before starting work on a machine or equipment that has been locked out or tagged out, the authorized employee needs to show that the machine or equipment has been isolated or de-energized.

Your documented procedure must also address start-up procedures once maintenance or servicing is complete. Follow this procedure to release the equipment or process from lockout or tagout:

1. Machine or Equipment
   Inspect the work area to ensure that unnecessary items have been removed and that machine or equipment parts are intact.

2. Employees
   Employees must be safely positioned or removed from the work area. Tell affected employees that the lockout or tagout devices are being removed before removing the lockout or tagout devices and before energizing machines or equipment.

3. Lockout or Tagout Device Removal
   The employee who applied the lockout or tagout device must be the person to remove the device. If that employee is not available to remove the device, then it may be removed under the direction of the employer, provided that specific procedures and training for such removal have been developed, documented, and incorporated into your energy control program.

Procedures DO NOT have to be documented for a particular machine or equipment when all of the following eight conditions are met:

1. The machine/equipment has no potential for stored or residual energy after shutdown that would endanger an employee.
2. The machine or equipment has a single energy source that can be identified and isolated.
3. The isolation and locking out of that energy source will completely de-energize and deactivate the machine or equipment.
4. The machine or equipment is isolated from that energy source and locked out during service or maintenance.
5. A single lockout device will achieve a locked out condition.
6. The lockout device is under the exclusive control of the authorized employee performing the service or maintenance.
7. The servicing or maintenance does not create hazards for other employees.
8. The employer using this exception has had no accidents involving the unexpected activation or energization of the machine or equipment during service or maintenance.

Outside Contractors

Outside contractors doing maintenance or repair work on any equipment at your facility must share their lockout/tagout procedures with all affected employees. You must also share information on your lockout/tagout procedures with the outside contractor.

Group Lockout or Tagout

There are special procedures for servicing or maintenance performed by two or more people:

- Responsibility
  Designate one employee with primary responsibility for the project. This employee will remain responsible throughout the project.
- Multiple Individual Locks
  Each authorized employee will place a personal lockout or tagout device on the group lockout device, group lockbox, or similar mechanism when he or she begins work. Each employee removes their device when finished working on the machine or equipment being serviced or maintained.

- Shift or Personnel Changes
  If a shift or personnel change occurs before the maintenance or servicing is finished, one employee must be designated as responsible for the specific procedures to ensure that lockout/tagout protection is continued. This employee will provide for the orderly transfer of lockout or tagout devices between outgoing and incoming employees.

Training and Communication

The lockout/tagout standard includes training for employees based on the duties performed by the employee. Employee categories are explained below.

Authorized Employees

An authorized employee is a person who locks out or tags out a machine or equipment in order to perform service or maintenance on that machine or equipment. Authorized employees must receive training in how to recognize a hazardous energy source and the type and extent of energy available in the workplace, as well as the methods and means necessary for energy isolation and control.

Affected Employees

An affected employee is one whose job requires:

- Operation or use of a machine or equipment that is being serviced or having maintenance performed under lockout or tagout.
- Working in an area where servicing or maintenance is being performed under lockout or tagout.

Affected employees need instruction in the purpose and use of the energy control procedures. An affected employee becomes an authorized employee when duties include performing service or maintenance while exposed to potentially hazardous energy.

Other Employees

Other employees are those whose work operations are or may be in an area where energy control procedures may be utilized. They must be instructed about the procedure. These employees must also be aware that attempts to restart or re-energize machines or equipment which are locked out or tagged out are prohibited.

Tagout Systems

When tagout systems are used, employees must also be trained in the following limitations of tags [29 CFR 1910.147(c)(7)(ii)(A-F)]:

- Tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall energy control program.
- Tags are only warning devices placed on energy-isolating devices and do not provide physical restraint on devices, such as provided by a lock.
- Once a tag is attached to an energy-isolating means, it is not to be removed without permission from the authorized person responsible for it.
- A tag should never be bypassed, ignored, or otherwise defeated.
- Tags must be legible and easily understood by all authorized employees, affected employees, and all other employees whose work operations are in or near the area.
- Tags and their means of attachment must be made of materials that will withstand the environmental conditions encountered in the workplace.
- Tags must be securely attached to energy-isolating devices so that they cannot be accidentally detached during use.

Employee Retraining

Authorized and affected employees must be retrained whenever the following occurs:

- A change in their job assignments.
- A change in machines, equipment, or processes that present a new hazard.
- A change occurs in the energy control procedures.

Employers must certify that employee retraining has been completed and is kept up to date. The certification should contain each employee's name and dates of training.

Periodic Inspections

At least annually, you must conduct an inspection of the energy control procedure to make sure the procedure and the standard requirements are being followed.

Minor Adjustments and Servicing Exception

Lockout/tagout requirements do not apply to minor adjustments or servicing tasks that take place during the normal production procedures if the activities are routine, repetitive, and integral to the use of the equipment for production. When more than one employee performs a particular servicing or maintenance operation on a machine or equipment, the servicing or maintenance generally is not considered minor in nature, and the machine or equipment must be locked out.

In order for the aforementioned exception to apply, the work must be performed in a way that prevents exposure, such as by the use of special tools and/or alternative procedures that keep the employee out of the areas of potential contact that could cause harm. Thus, lockout or tagout is not required by this standard if the alternative protective measures enable the servicing employee to clear or unjam, or otherwise service, the machine without being exposed to unexpected energization or activation of the equipment or release of stored energy.

Compliance with the machine guarding requirements is an example of an alternative measure. An employer who requires employees to perform routine maintenance and/or servicing while a machine or process is operating in the production mode must provide employee safeguarding under the applicable machine guarding requirements. Operations such as lubricating, draining sumps, servicing filters, and inspecting for leaks and/or mechanical malfunctions are examples of routine operations that often can be accomplished with effective production-mode safeguards. However, the replacement of machine or process equipment components, such as valves, gauges, linkages, support structures, etc., is not considered to be a normal routine maintenance function that can safely be accomplished during machine or process equipment operation.

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